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	Page
Profitable Use of Fertilizer in Potato Production C. B. MILLAR	90
Experimental Results From the Use of Paper Mulch On Potatoes E. V. HARDENBURG	91
Certification of Potatoes in Nebraska MARX KOEHNKE	94
New Marketing Development E. R. JACKMAN	96
The Potato Association of America Loses a Loyal Member	98
Crop and Market News	99
Notes	102
Review of Recent Literature	104

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AMERICAN POTATO JOURNAL

PUBLISHED BY

THE POTATO ASSOCIATION OF AMERICA

EAST LANSING, MICHIGAN

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Profitable Use of Fertilizer In Potato Production

C. E. MILLAR, Michigan State College, East Lansing

Many factors influence returns from fertilizer applied to any crop. Some of these factors which influence particularly the returns from an application of fertilizer to the potato crop are: the soil reaction, the supply of organic matter in the soil, the quantity and distribution of rainfall, the composition of the fertilizer, and the location of the fertilizer in relation to the seed piece.

Fertilizer does not give maximum returns when applied to a potato crop growing on strongly acid soil. Soils which are only slightly acid are much more favorable for the growth of potatoes, and hence the crop is able to make a more effective use of the plant food applied. Also, there is reason to think that certain constituents of the fertilizer remain in a more available condition in a soil which is not strongly acid than in soil which is very deficient in lime.

The supply of organic matter in the soil also has considerable influence on the growth of the potato crop, and hence on its ability to use efficiently any commercial plant food applied. Both the yield and quality of potatoes are better on soils well supplied with humus. This result is doubtless due in large measure to the effect of the organic matter in holding moisture throughout the growing season. The stabilizing influence of organic matter on the growth of the crop enables the potato plant to make a more effective use of the plant food supplied.

An even distribution of moisture throughout the growing season is one of the most important factors in success with a crop of potatoes. Excessive early summer rains result in the development of large plants which suffer because of their size if

a drought ensues during midsummer. Late fall rains cause the crop to renew its growth which results in irregular and oversized tubers. Late fall rains also prolong the growing period of the plants and increase the possibility of damage by an early frost. A potato crop which receives a fairly uniform supply of moisture during the entire growing season is in best condition to make the most advantageous use of the plant food supplied in commercial fertilizer and to produce a large crop of uniform sized tubers.

The supply of moisture influences greatly the quality of fertilizer which can be used. For example, in one field trial in 1931, we applied 300, 600, 900, and 1,200 pounds of a 4-8-7 fertilizer to different portions of the same field. The resulting yields were 117, 151, 150, and 157 bushels of potatoes, respectively. It will be noticed that no increase in yield resulted above 600-pound application of fertilizer. A heavier and more uniform rainfall than we had in 1931 would probably have resulted in increased yields from use of larger quantities of fertilizer than the 600 pounds. Again, in 1929, 200 pounds of 4-16-8 fertilizer gave virtually as large a yield as 500 pounds, and an application of 500 pounds of this mixture gave as large a yield as 2,000 pounds. Undoubtedly, the limited rainfall of 1929 is the partial explanation of the inability of the potato crop to use more fertilizer to advantage. In general, the rainfall in Michigan does not seem adequate to permit potatoes to use more than from 500 to 700 pounds of fertilizer advantageously. Maine receives about ten inches more rainfall each season than does Michigan and growers are able to use from 1,500 pounds to a ton of fertilizer to good advantage. Undoubtedly the additional rainfall received in Maine accounts to a considerable extent for their ability to use effectively so much more fertilizer than the Michigan potato grower can use.

The analysis of the fertilizer applied to potatoes also has a great deal to do with the results received. We have found fertilizers with a 2-12-6, a 4-16-4, or a 4-16-8 analysis to be the most effective which the Michigan farmer can use under general conditions. The experiments on which these recommendations are based cover a period of about twelve years. Under certain conditions probably more potash can be used to advantage, but under average conditions 8% potash seems to be adequate.

In 1931 experiments were conducted in the placement of fertilizer. A special planter was constructed for this purpose, which would put the fertilizer in very definite position with relation to the seed Tests included placing the fertilizer (1) below the seed piece about two inches; (2) mixing the fertilizer thoroughly with the soil around the seed piece; (3) placing the

fertilizer in bands on either side of the seed piece and about an inch and a half or two inches from it; (4) dropping the fertilizer in bands on either side of the seed piece and about two inches below it; (5) placing the fertilizer in bands on the level with the seed piece, but about four inches from it on either side. Fertilizer applied in each of these methods gave a decidedly increased yield over that obtained on unfertilized land. On the whole, it was found that fertilizer should be placed as close to the seed as possible without being close enough to cause injury. Placing the fertilizer on either side of the seed piece, but somewhat below it, seemed to be the most desirable method of application. This experiment was conducted in cooperation with the U. S. Department of Agriculture and will be repeated this year.

There has been some contention that in a dry season applications of fertilizer particularly high in potash would give better results. Our experiments, however, have shown that about 8% of potash has been as effective in dry seasons as fertilizer containing more potash.

Experimental Results From the Use of Paper Mulch On Potatoes

E. V. HARDENBURG, Cornell University, Ithaca, N. Y.

Several experiments have been reported recently on the results of using paper mulch as a substitute for cultivation of certain vegetable crops. In these experiments, tomatoes, beans, beets, peppers, cabbage, sweet corn, cucumbers, musk-melons, and perhaps other vegetables have been included. In general, the warm season vegetables have shown a favorable response to the effects of mulch paper while the cool season types have not.

The effects of paper mulch whether favorable or otherwise are generally attributable to its influence on soil moisture, soil temperature, and soil nitrification. Thompson and Platenius[1] recently reported increases in yield of 12 to 57 per cent with such warm season crops as beans, tomatoes, peppers and muskmelons while results with such cool weather crops as beets and cabbage were negative. They attribute favorable results with the crops listed principally to the fact that the paper main-

[1]Thompson, H. C. and Platenius, Hans. Results of paper mulch experiments with vegetable crops. Amer. Soc. Hort. Sci. Pcdgs. 1931.

tained a higher soil temperature than that found in the cultivated or unmulched plots. In general, both moisture and nitrate nitrogen was slightly higher in the soil under the mulch paper

Magruder[1] in 1930 reported results from the use of paper mulch on potatoes. He tried several different grades of paper in comparison with ordinary cultivation under very favorable soil conditions at Wooster, Ohio, in 1928. Certified seed of the Irish Cobbler variety was planted. The increase in yield from the paper mulch varied from 5 to 27 per cent depending on the grade of paper used He also obtained an increase in the percentage of U. S. No. 1 grade in the crop varying from 2 to 10 per cent.

Plan of the Experiment

This experiment was begun in 1928 and continued through the years 1929, 1930 and 1931, several different soil types being used. In 1928 the soil was of Dunkirk sandy loam, in 1929 and 1930 of Dunkirk silty clay loam and in 1931 of Dunkirk silt loam. The plots consisted of four rows each, the rows being 25 hills long, rows 3 feet apart and hills 18 inches. Each plot was of about 1/100 acre and all plots were planted in triplicate. The papered plots were alternated with the cultivated plots to equalize soil variation as much as possible. The mulch paper used was of a light grade durable enough for only one year and of a type which is put up in rolls 36 inches wide, 300 linear yards to the roll. To accommodate 36 inch rows, the paper was cut to 30 inches wide, allowing a 6-inch width for the potato rows between the strips of paper. The paper was applied immediately after planting and fastened down with staples of No. 10 wire spaced about 4 feet apart and with dirt along the edges. Certified seed of White Rural type was planted each year.

Results

The effects of paper mulch on total yields, yield of U. S. No. 1 grade and number of tubers per stem for the years 1928 to 1930 inclusive are given in table 1. The percentage increase in yield of U. S. No. 1 grade potatoes from the papered plots varied with the season from 23.3 to 97.7 per cent. Both total and No. 1 yield showed a consistent increase more or less in correlation with an increase in the number of tubers per stem. There was not a corresponding increase in the number of stems

[1]Magruder, Roy. Paper mulch for the vegetable garden. Ohio Agr. Exp. Sta. Bul. 447. March 1930.

per plant, the average stem number for the four years for the cultivated plots being 2.53 and for the mulched plots 2.48.

No significant effect on the quality of the crop can be shown for the use of the paper. In 1928 and 1929 the percentage of tubers grading U. S. No. 1 was higher from the papered plots, in 1930 it was lower and in 1931 there was no difference. The average for the four years was 79.4 per cent for the cultivated and 82.1 per cent U. S. No. 1 grade for the mulched plots. This difference is not significant

YEAR	Total Yield per A. Bushels			U. S. No. 1. Yield per A. Bushels			Av. Number Tubers per Stem		
	Cultivated	Mulch	Inc. %	Cultivated	Mulch	Inc. %	Cultivated	Mulch	Inc. %
1928	212.7	254.9	19.8	152.2	189.5	24.5	3.21	3.82	19.0
1929	262.8	467.0	77.7	194.1	383.6	97.7	1.92	3.17	65.1
1930	183.9	260.8	41.5	158.6	331.6	39.7	1.91	2.56	34.9
1931	237.6	292.9	23.3	204.9	252.7	23.3	2.28	2.65	16.2
Average	224.2	318.8		177.5	261.8		2.34	3.06	
Difference		94.6			84.3			.72	
Gain (per cent)		42.2			47.5			30.8	
Odds		1999:1			1000:1			4999:1	

Discussion

The significant increase in yield shown for the years 1929 and 1930 apparently resulted mainly from the fact that the plots were situated on relatively heavy poorly drained soil which was especially cold and wet immediately after planting. The mulch paper apparently resulted in a rise in soil temperature sufficient to hasten growth on the papered plots. At any rate, these plants made a much more rapid early growth and maintained this advantage fairly well throughout the summer. Under more favorable soil conditions in 1928 and 1930, the differences between the plants under the two treatments were never very great. The increase in set of tubers under the papered plants may be attributed to the difference in soil temperature, since various investigators have shown that soil temperature and tuber set are directly related. Although soil temperature differences were not recorded in this experiment, Thompson and Platenius reported somewhat higher temperatures in their mulched plots.

Conclusions

In spite of significant increases in yield of potatoes from the use of mulch paper, its use on a commercial scale is not likely because of the cost of the paper. The paper used in this experiment cost at retail $7 a roll of 300 linear yards or at the rate of over $100 an acre. Even though it could be bought in large quantity at half this cost, the difference between this and the value of the increased crop at 40 cents a bushel would still be in favor of cultivation. The average cost per acre of cultivating potatoes on 100 western New York farms in 1931 was $6.75. Under present methods of applying mulch paper, the saving in cost of cultivation would be far more than outweighed by the cost of applying the paper.

Certification of Potatoes In Nebraska

MARX KOEHNKE, Alliance, Nebraska

Certification of potatoes in Nebraska has been conducted since 1919. This work was performed directly by the College of Agriculture of the University of Nebraska until 1924, and by the Nebraska Certified Potato Growers, a subsidised agency since that time. In March 1931, a state law was enacted under which the work is organized at the present.

During the season of 1923, due to the very poor prices obtained by the certified growers for their product, a general move was instituted in western Nebraska for some sort of cooperative marketing of their potatoes. During the winter of 1923-24, after a series of meetings of growers of certified potatoes, plans for cooperative marketing were considered, and by the time that active certification was demanded for the summer of 1924, complete plans had been drawn up, contracts completed ready for the signatures of growers, and a definite program begun.

Briefly, these plans called for the cooperative marketing of all potatoes certified under the Nebraska regulations. A contract with the College of Agriculture was completed, in which the college agreed to supervise the work of the certification, pass on the qualifications of inspectors, establish the standards, and to help with the work of seed improvement as in the past. The association of growers, now organized as the Nebraska Certified Potato Growers Co-op., with headquarters at Alliance, Nebraska, took over the active work of certification, as well as

marketing of certified potatoes. Thus was launched a movement that has been very successful, judged from either the standpoint of the cooperative marketing, or from the standpoint of the quality of the product that has been put on the southern market during the succeeding years.

During the winter of 1930-31, competing agencies began shipping privately certified potatoes, and after considerable trouble in courts protecting their product, the organization of certified growers and friends of the industry, had drafted a bill which was presented by the state legislature and was added to the statutes as the "Certified Seed Law."

The passage of such a law was the culmination of years of effort on the part of the growers of certified potatoes, and the officials in charge of the certification and marketing of the product. This law definitely established the College of Agriculture as the sole agency in the state of Nebraska having power to certify, or to have certified through its agents, either potatoes, or any other seeds or plant parts. In the case of potatoes, the agency which was authorized to conduct the work of certification was the Nebraska Certified Potato Growers, with headquarters at Alliance, Nebraska. As long as this agency maintains the standards established by the College of Agriculture, employs inspectors approved by them, and conducts the work in a satisfactory manner, it will be continued in such capacity.

Beginning with the year 1924, acreage and production gradually mounted until the peak was reached in 1931 in acreage entered for certification, while the peak production occurred the year previous, on account of the general crop shortage in 1931. In 1931, the record entry of 12,000 acres for certification looked like a monster, for it represented about a 50 per cent increase over the previous year. However, due to the straightened financial condition of the section, final acreage shrunk to 10,499 acres, and then the severe conditions during the summer shrunk average production to about 50 per cent of normal for the section. This brought the production to about half what it was the previous year.

A study of the total shipments made each year to southern states, the heavier acreages planted to certified potatoes, the steady increase of carloads produced, and the demand which Nebraska state certified potatoes create, speaks for the success of the industry. Since Nebraska is primarily an agricultural state, any branch of such activity which builds up to high standards, and sells cooperatively to the general good of its members, is for the benefit of the whole.

With all farm products bringing low prices, in many cases below the cost of production, farmers, as well as business men whose livelihood depends on the success of these same farm operations, can well look into the success of these branches of agriculture that have stood the test of time, and are continuing with fair chances of continued operation. The certified potato industry in Nebraska has become a highly specialized business, calling for the services of specialists in all branches, growers, inspectors, scientists for the development of disease free strains combined with high productivity, and for cooperation from all, to the end that the product so developed may be marketed effectively. To that end have these Nebraska people been working, with success as attested by their years of operation, constant improvement, and steady growth.

New Marketing Development

E. R. JACKMAN, Oregon State College, Corvallis, Ore.

Potatoes for a hundred years were marketed in about the same manner, haphazardly. In the main, the motto prevailed, "Let your conscience be your guide." But during the past ten years, marketing improvements have tumbled over each other.

First came the new branded sack idea instituted by dealers who believed they could thereby create a market for their particular brands. Then the federal and state grades with the grade stamped upon the sack. Then the small package idea caught on—first the 50-pound sack, followed rapidly by 25's and 10's and 15's, and with the little sacks came the even weight plan for the big bags. Nearly all of the potatoes from many sections now go onto the market in even weight bags, 102 pounds per sack when packed.

Whether all of these innovations are to the advantage of the growers or not may be open to question. But they are all here and here to stay and, like the radio and aeroplane and vitamins, it makes little difference whether the individual likes them or not. Any grower or dealer who fights them is quickly passed by the procession.

For the past five years, various dealers in the west have been experimenting with washing potatoes. Several large firms at Stockton, California, have been washing hundreds of cars yearly. The soil at Stockton is peat, and like peat elsewhere, is entirely and decidedly black. It sticks to the potatoes and makes them unattractive in appearance. The washing was successful in improving appearance and it extended to Idaho

and was tried in Oregon. It was not much of a success in Oregon due to the many small farms and widely distributed crop. In Idaho it was quite successful.

But as the washing began to grow into a real movement with $2,500 washing machines established here and there, a still newer development threatens to supplant the washers. This new machine is a brusher. So far it is only a slightly revamped apple brusher, but it is effective and it is likely that shortly the Potato Journal will be carrying advertisements of potato brushers. The brusher accomplishes the job of dirt removal as well as washing, is incomparably less trouble, costs only a third as much initially, and almost nothing to operate. The brushers are merely installed in front of warehouse sorters and the potatoes dumped into the brusher hopper instead of the sorter hopper. A suction fan takes the dirt away and the cleaned tubers are then mechanically dumped upon the sorter. Thus no additional help is required.

Various dealers and growers in Maine, New York, Pennsylvania and elsewhere assure the writer that these brushed potatoes outsell the uncleaned lots—in many cases bringing five cents per bushel more and in draggy markets moving when the others do not. The latter feature is the one appealing right now to our western Netted Gem dealers, as our markets are surely draggy enough as this is written.

What effect do all of these things have upon the industry? It is too early to tell as yet. Potatoes had to be dressed up in order to avoid an obscure back seat. They had begun to suffer pains in the region of their per capita consumption.

Most of the foregoing developments points to warehouse packs. This in turn means a concentration of the industry into regions where nearly every farmer is a potato grower. Potatoes as a small side line in a general farming scheme will not offer the hope in the future that they have in the past. This concentration has already developed markedly, witness Aroostook in the east, and Twin Falls and Idaho Falls in the west. It will develop still more as refinements of packs develop for special trade needs. The restaurants are now beginning to demand (and get) nothing but large potatoes, and certain high class apartment house trade is here and there demanding (and getting) 10-ounce potatoes for baking. These things are pointing the way. Most of us will probably live to see the time when potatoes quite generally will be sized, cleaned, and various crops segregated in accordance with their suitability for baking, french frying, boiling and so on.

The Potato Association of America Loses a Loyal Member

In the death of Lou D. Sweet on May 3, the Potato Association of America sustained a deep loss. Mr. Sweet had been a member of the Association practically from the date of its organization and was always keenly interested in its welfare. During the incumbency of the writer as secretary-treasurer of the association Mr. Sweet secured more new members than anyone else in the organization.

As president of the association from 1916 to 1918 he did much toward increasing the usefulness of the organization.

It was the privilege of the writer to have enjoyed a peculiarly close friendship with Mr. Sweet for approximately 20 years and throughout that period never failed to receive his whole-hearted support of any movement having for its object the upbuilding of the potato industry.

The news of Mr. Sweet's death came as a distinct shock to his many friends. The only information we have regarding his death is that it was due to internal hemorrhages of about a week's duration. He was 69 years of age and had spent 52 years of his life in Colorado. At the time of his death he was president of the Colorado State Forestry Association.

Of the many public offices that Mr. Sweet filled perhaps none brought him greater prominence than that of his connection with the United States Food Administration in which organization he served as a potato expert. In this capacity he did much to bring about the adoption of the U. S. Potato Grades.

His interests, however, were in no way confined to potatoes as could be easily observed by those visiting the Sweet ranch, where extra quality cereal seed was produced and heavy tonnage of alfalfa hay grown to furnish roughage for livestock in which he was well informed.

It is given to but few men to have as wide and as keen an interest in agricultural problems as a whole as did Mr. Sweet. In the potato industry his keenest interest was without question along the line of better seed. He was a firm believer in the superiority of seed produced at high elevations, provided, of course, it was properly grown.

No more fitting tribute can be tendered him by his friends than that he was wholeheartedly devoted to every progressive movement having for its object the betterment of agriculture.

W. STUART.

Crop and Market News

Early Potato Production Reduced

(Contribution from the Bureau of Agricultural Economics)

Prices of new potatoes remained high until about May 1 and then declined rather rapidly under the increasing shipments and somewhat limited demand. Markets for old potatoes also weakned about the same time, and prices have shown a downward trend.

The Florida crop was light. The main shipping season in that state was closing with a record of only about 2,500 cars moved, as compared with the 1931 season total of 6,900 cars. The lower valley of Texas had forwarded less than 1,500 cars, or considerably fewer than last season.

Based on May 1 condition, the early group of states, not counting Florida and the lower valley of Texas, expected a commercial crop of 7,435,000 bushels, or only three-fifths as many as last year. Both acreage and yields were lower this season. The forecast by states was as follows:

	1931	1932
	1,000 bu.	1,000 bu.
Georgia	450	169
South Carolina	2,920	924
Alabama	2,044	1,071
Mississippi	205	162
Louisiana	2,834	1,300
Texas (other)	1,760	1,316
California	2,590	2,493
Seven States	12,803	7,435

Interesting crop notes for several important states were published during early May, as follows:

FLORIDA—Yields of Florida potatoes are turning out as originally forecast. Recent rains will help the late crop around Elkton and LaCrosse area, which will start digging about the middle of May. Carlot movement will continue to be light from the state, but digging will continue until June 1.

GEORGIA—Recent rains came just in time to assure a normal yield. Digging will start the week of May 23 but the heaviest movement will come the week of May 30.

SOUTH CAROLINA—The potato crop was beginning to suffer from lack of rain, but good rains the last of April and the first of May will give near a normal yield. Digging will start the week of May 16 in a small way It now looks as if the last week of May and the first week of June will be the heaviest shipping priods

NORTH CAROLINA—The stand in the state as a whole is better than usual and the condition of the vines is very good. Digging will start at the usual time—last week of May in Carteret county; first week in June in Aurora, Bayboro and Mt. Olive. There are a few crops in the last-named sections that may be dug the last week in May, but that will depend upon market conditions. The Elizabeth City section will start the middle of June on most of their acreage, while Currituck county, being warmer, will start nearer the first of the month.

VIRGINIA—Eastern Shore reports about 95% of a stand on the potatoes that are up, and color is good, with promise of an excellent crop. Maturity should be at the usual time. Some seed lost due to freezing weather, but it is believed nearly all was replanted.

ALABAMA—Growth of the Irish potato crop was retarded by dry weather during April, but recent rains have improved prospects. Shipping season is expected to begin May 10 or 15. Prospective yields in Escambia and Mobile counties are very good, but in Baldwin county impaired stands resulting from freeze damage will reduce yields considerably.

MISSISSIPPI—Growth of the Irish potato crop was retarded by dry weather during April, but the dry conditions were relieved by quite general rains on April 29 and 30. Some acreage will be ready for digging by May 23 but most of the crop will probably move during June.

LOUISIANA—Weather in April was unseasonably cool, with a dearth of rainfall, and growing conditions were not good. This accounts for the relatively low condition of the crop—68% of normal, compared with 89% a year ago.

TEXAS—The lower Rio Grande Valley crop is nearly harvested and yields have exceeded expectations. Shipments from the Eagle Lake-Sugarland-Wharton area will begin May 10 to 15 Dry weather during April placed this crop in a serious position, and rains the last week in April came none too soon. The crop is believed to have suffered some damage prior to the rains, and yields are expected to run considerably below a year ago. Conditions in other (north Texas) counties are spotted. Some sections suffered from the prolonged dry spell, while others were apparently unhurt. However, in general, the average yields are likely to fall short of last season.

In the second-early states (including North Carolina, Virginia, Maryland, Tennessee, Arkansas and Oklahoma) the commercial plantings are estimated at 101,500 acres, compared

with 139,760 last season and a recent four-year average of 144,-160 acres. Every state reports a reduction. North Carolina shows 11,000 acres less than in 1931, and Virginia reports a cut of 20,000 acres.

Early Shipments Light

During late April and the first week of May, shipments of new crop potatoes were limited to about 300 cars per week. During the second week of May, movement jumped to about 1,050 cars from seven states, but even at that rate the shipments were only one-third as heavy as a year ago. A few cars were already coming from South Carolina and Mississippi. In mid-May the output of Louisiana was exceeding that of any other Southern state.

By the middle of May f.o.b. prices of best Spaulding Rose potatoes in northern Florida had declined to $6.75 per barrel or $4.25 per 100-pound sack. First reports from southern Alabama showed a range of $2.25-$2.35 per 100-pound bag of best Bliss Triumphs, compared with lower prices of $1.75-$2 in the Rio Grand valley of Texas. Louisiana shippers were getting the same price as those in Alabama. A few new potatoes were arriving from Cuba and Bermuda. New York City quoted Bermuda barrels jobbing at $8-$8.50. General jobbing range on Florida barrels had dropped to $7.25-$8.50 and the 100-pound sacks of Bliss Triumphs from southern sections sold at $2.75-$3.90, while 50-pound bags from Texas brought $1.50-$2.10. Prices were more than double those of 1931.

Old Potato Markets Weak

For a considerable time, the carlot movement of old potatoes has been exceeding corresponding records of last year by about one-fifth. Shipments had decreased to around 3,500 cars per week by mid-May and prices tended downward rather sharply. F. o. b. quotations were only about half those of a year ago, and terminal market prices were lower than those of 1931 by about one-third. Shippers of Round Whites in western New York were getting 70c per 100 pounds, while Green Mountains in northern Maine returned 50c. The f. o. b. range in Michigan was mostly 65c-70c, compared with sales in Wisconsin at 55c-60c. After having been considerably stronger, the Chicago carlot market was again quoting sales of northern Round Whites at 75c-85c per 100 pounds, and Idaho Russet Burbanks at $1.15-$1.30. Eastern jobbing centers reported most sales of Maine Green Mountains at 90c-$1.35 and New York Round Whites at 75c-$1.25, with Prince Edward Island Green Mountains around $1.50 in New York City. The "'futures" market in Chicago had been discontinued for the time being.

Notes

Colorado

Avon, Colo.—In an effort to still further improve the quality and yield of Colorado's famous potatoes, more than 20 promising varieties are being tested at the Avon branch of the Colorado Agricultural College Experiment Station this season.

Included in this experiment are some of the finest new varieties developed by painstaking research in different sections of the United States, Canada and Scotland, according to C. H. Metzger, associate state horticulturist at the college.

Fifty of the 200 kinds under test are the standard commercial varieties and the best in this country and Canada, with a few from Great Britain. Over 100 of the others are new seedlings grown from true seed imported from Scotland. These were started in the greenhouses at the college in Fort Collins a year ago. The largest tubers of these that are being planted this year are about the size of a walnut. There appears to be some good, smooth earlies, and second earliest among these seedlings.

Promising Varieties

"Many of the new varieties show considerable promise," says Metzger. "One of the most promising is the Katahdin, which was developed by the United States Department of Agriculture and was released to the state agricultural stations for trial last year. This variety has the most vigorous vine of any in the test, and its leaflets are extremely large. The tubers are white and resemble those of the Rural New Yorker in shape.

"Another promising variety," he adds, "is Long Hope, developed by a grower in Wisconsin. It was one of the heaviest yielders among the newer sorts, although its tubers are slightly rough under our soil conditions.

Growers Get Stock

"A dark red strain of the Perfect Peachblow has also been under observation for several years. It will outyield the old standard type and its attractive appearance should increase the market demand for Peachblow potatoes. Some of this stock has been released to San Luis Valley growers for trial this year."

Other varieties will be released to growers as soon as they are proved equal or superior to varieties now being grown in Colorado, it is stated.

The various varieties under test at the Avon Mountain Experiment Station farm may be seen and closely inspected by potato growers and farmers generally who visit the station during the annual Farmers' Day here this August.

Nebraska

The contemplated acreage for certification will be reduced materially for the coming season. However, complete reports are not on hand, as our date for receiving applications does not close until May 10th. Crop conditions have improved wonderfully in the last two weeks by rain and snow totaling about three inches. This is quite general over western Nebraska, and is the greatest amount of moisture received since last fall.

Our winter was extremely mild and very little snow fell in most of the district, so that up to very recently, conditions were poor. The commercial acreage of potatoes will probably be increased slightly, on account of a number of conditions. The beet sugar industry is a large one and they are in such a poor condition at the present time, which will cause farmers to switch to potatoes. Another factor which might increase potato acreage is that it is one of the few crops which made any money for the farmers in this district. On account of the mild winter, however, much of the seed stock which is being held is dry rotting, and that factor will cut down the acreage somewhat.

MARX KOEHNKE.

Eureka Potato Machines
Make Money for Potato Growers
Eureka Potato Machines take hard work out of potato growing. They reduce time and labor costs. They assure bigger yields.
Potato Cutter
Cuts uniform seed. Operates with both hands free for feeding.
Potato Planter
One man machines doing five operations in one. Over twenty-two years' success.
Traction Sprayer
Insures the crop. Sizes, 4 or 6 rows. 60 to 100 gallon tanks. Many styles of booms.
Riding Mulcher
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Review of Recent Literature

Asseyera, T. Bud Mutations in the potato. The Lenin Academy of Agricultural Sciences in U. S. S. R. Bulletin No. 4, XXVIIth Vol., pp 194-218. 1931.

The author has made an attempt at a systematic study of bud mutational variation in the common potato, Solanum tuberosum L. In five years' work (1925-1930) a collection of bud mutants, containing more than 150 different forms have been obtained.

The periclinial chimerical structure of the bud mutants of the potato was studied by cutting the tubers of the investigated mutants into halves at a time about two months before planting. In one-half of each tuber all of the eyes were removed by cutting to a depth of ½ mm; the other half was left intact to serve as a control. The halves were planted in separate rows in the spring. The halves with the eyes intact would then produce plants similar in characteristics to the parent mutant. The halves with the eyes removed produced, in 25-50% of the cases, plants similar to the normal form from which they originated.

The author sums up the results of her observations and experiments in three main conclusions:

"1. The bud mutants of the potato always, or with rare exceptions show the character of periclinal chimaeras, the mutation affecting, in the majority of cases only the epidermis.

2. They proceed, as a whole, with an equal ease in the direction of the disappearance of the dominant character, as in the direction of its appearance.

3. They are not confined to the racial characters and embrace also separate specific ones."

The conclusions of the author do not all conform to the findings of other investigators. By a review of literature on bud mutation in potatoes and other plants, she presents data in agreement with her own conclusions and discusses the work of other investigators who do not agree with her results.

The article is illustrated with a number of photographs of the vines and leaves of mutants and the parents from which they mutated.

—W. F. RUSSOW.